

## REMARKS

Claims 1-27 of which claims 9, 18 and 27 are withdrawn are presently pending. In the present outstanding Office Action, all the claims that are not withdrawn are objected to because the Examiner submits that they are "are very difficult to understand due to the use of confusing language" and claims 4, 5, 13, 14 and 22-23 are rejected under 35 U.S.C. second paragraph for being indefinite. In addition, claims 1-8, 10-17 and 19-26 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,157,747 to Szelinski.

In response, in the present amendment claims 1-27 are cancelled and new claims 28-55, of which claims 28, 45 and 50 are independent claims, are added.

Limitations recited in claim 28 are supported in various portions of the specification. The limitation of determining first and second anchor points is supported by exemplary embodiments of the invention shown in Figs. 7 and 9 and referred to in the summary of the invention as "two points on a vertical anchor" (page 2 lines 20 and 21). Optional anchor points are inherently determined by determining a "vertical" anchor in each image since the ends of the anchor always define two points. Exemplary vertical anchors are repeatedly noted throughout the text, *e.g.* page 2 line 21, page 10, lines 23 and 24, page 21 lines 21-22. Exemplary anchor points are denoted in the text as  $P_k$ ,  $Q_k$  where the index "k" indicates that the points belong to the k-th camera image. All the exemplary embodiments in the application share the limitation recited in claim 28 of "warping at least one portion of a given image of the camera images that includes the image's anchor points using a transform that changes the scale of a region in the portion and leaves the two anchor points invariant" (*e.g.* Figs. 6, 7 and 9).

The two additional points recited in claim 29 are shown by way of example as point  $P_k$  and  $Q_k$  in Fig. 6 (page 11 line 4) and points  $A_{11}$ ,  $A_{12}$ ,  $A_{21}$ ,  $A_{22}$  in Fig. 9 (page 11 line 23 – page 13 line 21).

Homographies that define correspondence between points in images are noted repeatedly in the text, (*e.g.* pg 11 line 4 – page 13 line 4) and support the material of claim 30.

Claim 31 is supported by See Figs. 7 and 9 and discussions thereof.

Claim 32 is supported by Figs. 7 and discussion thereof.

The limitation recited in claim 33 of equal length line segments between anchor points is supported by lines defined by points  $P_k$ ,  $Q_k$  shown in Fig. 7 and lines defined by points  $P_k$ ,  $Q_k$  and  $P_{k-1}$ ,  $Q_{k-1}$  shown in Fig. 9 and discussion thereof.

Claim 34 is supported by the same material that supports claim 33, i.e. lines defined by points  $P_k$ ,  $Q_k$  in Fig. 7 and lines defined by points  $P_k$ ,  $Q_k$  and  $P_{k-1}$ ,  $Q_{k-1}$  in Fig. 9 and discussion thereof.

Claim 35 is supported by Fig. 7 and discussion thereof.

5 Claim 36 is supported by Fig. 7 and discussion thereof.

Claim 37 is supported by Fig. 9 and discussion thereof.

Claim 38 is supported by the same material that supports claim 33.

Claim 39 is supported by the same material that supports claim 34.

Claim 40 is supported by Fig. 9 and discussion thereof.

10 Claim 41 is supported by Fig. 9 and discussion thereof.

Claim 42 is supported by Figs. 4C and 4D which schematically illustrate producing a mosaic in which a portion 53(i) of each image 51(i) is warped in accordance with an embodiment of the invention. The index "i", e.g. as shown in Figs. 8 and 8A and Figs. 10 and 10A, may assume all the values used to indicate particular images in a series of images to be mosaiced and therefore the method noted in claim 28, as well the methods noted in all the claims, may be applied to all the images in the series.

Fig. 9 schematically illustrates claim 43.

Claim 44 is supported by the meaning of the term "vertical" as used in the application. The term is used to describe a direction of an anchor line in an image, i.e. a line between anchor points, and refers to a direction that is substantially perpendicular to optic flow between images used in mosaicing that is generated by motion of the camera that acquires the images. An exemplary direction of motion of the camera relative to a scene is shown in Fig. 1. That the "vertical" direction refers to a direction perpendicular to the optic flow is inferred from the direction of the strips in images 20(i) in the Fig. and the references to vertical and horizontal lines shown in Fig. 4A and 5A.

Claim 45 is supported by at least the material that supports cancelled claims 1, 2. The limitation "warping at least a portion of the given image using a transform that leaves the anchor points in the given image invariant so that a distance between the additional points and the corresponding points are the same" is illustrated by Fig. 7 and the discussion thereof.

30 When quadrilateral  $P_k P'_k Q'_k Q_k$  in the figure is rectified the distance between the points  $P'_k Q'_k$  becomes equal to that between the corresponding points  $P_{k+1}$  and  $Q'_{k+1}$ .

Claim 46 is supported by the same material that supports claim 30.

Claim 47 is supported by the same material that supports claim 33.

Claim 48 is supported by the same material that supports claim 34.

Claim 49 is supported by the same material that supports claim 43.

Claim 50 is supported by Figs. 6-10 and discussion thereof.

Claim 51 is supported by Fig. 7 and Fig. 9.

Claim 52 is supported by Figs. 7 and 9 and discussion thereof.

5 Claim 53 is supported by the same material that supports claim 30.

Claim 54 is supported by the same material that supports claim 42.

Claim 55 is supported by the same material that supports claim 43.

10 With regard to U.S. 6,157,747 to Szeliski cited against cancelled claims 1-8, 10-17  
and 19-26 applicants note that Szeliski does not define anchor or warp images using a  
transformation that leaves the anchor points invariant. Szeliski cannot therefore support a  
prima facie case of anticipation against any of the independent claims and therefore against  
any of the claims in the application.

Applicants therefore submit that all the amended claims are patentable over Szeliski  
and respectfully await allowance.

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Respectfully submitted,  
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